JUL 29 1943

Gas Journal

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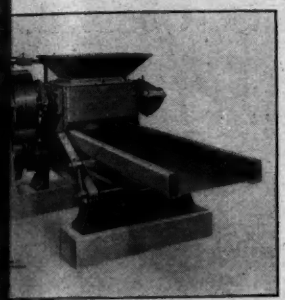

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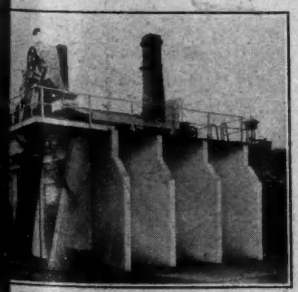

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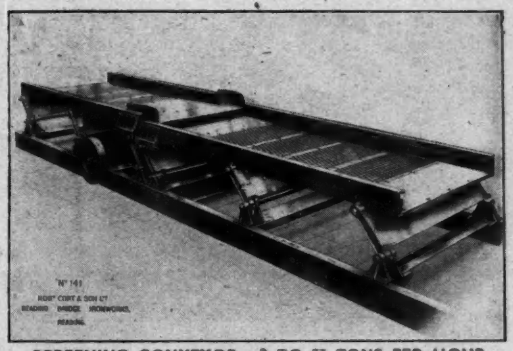
PER HOUR



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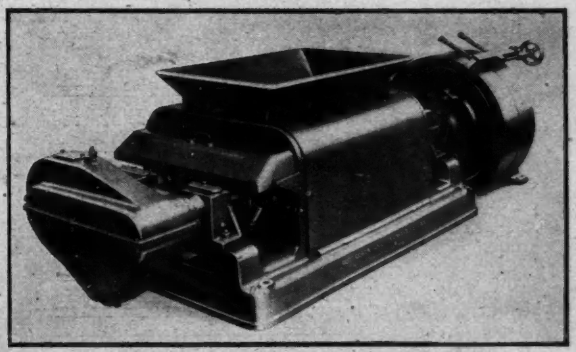

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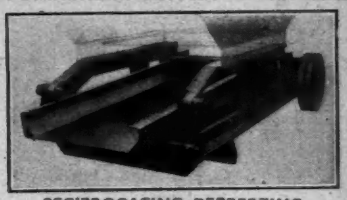

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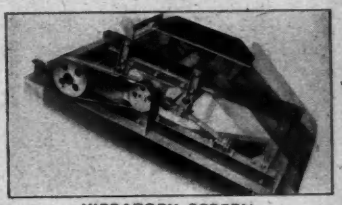

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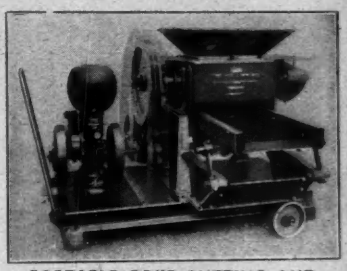

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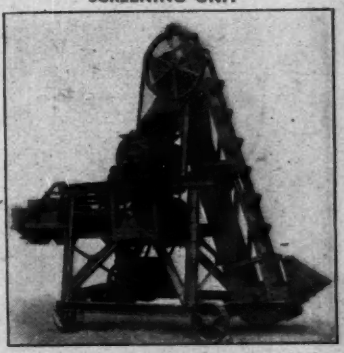

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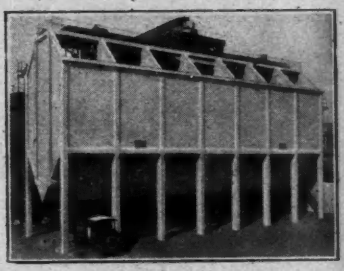

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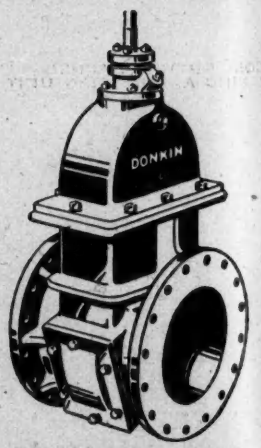

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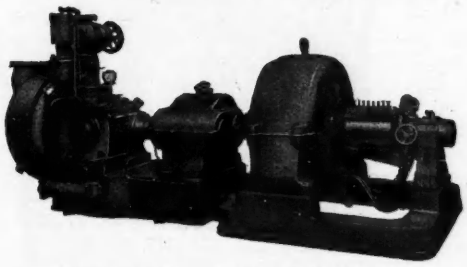

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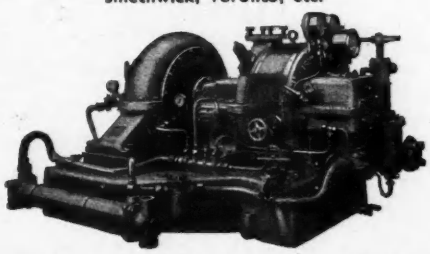

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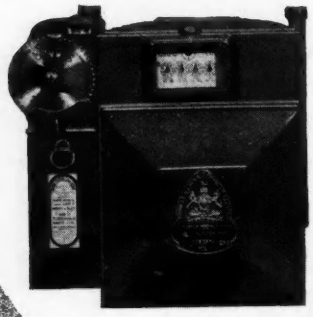

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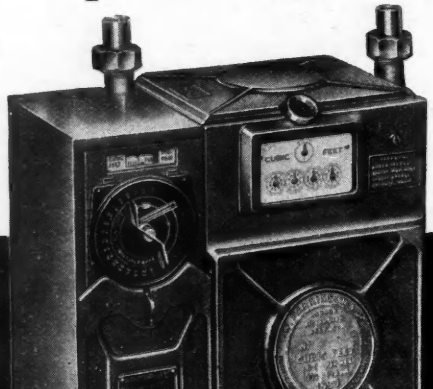

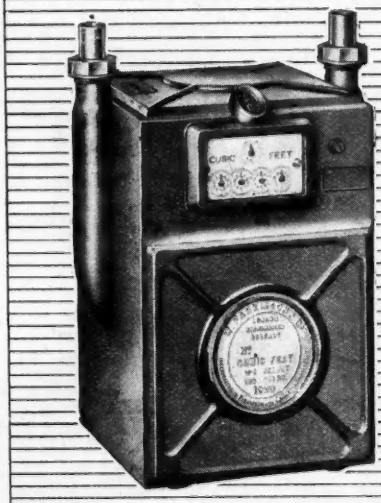

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GAS JOURNAL, JULY 7, 1943

VOL. 242 95th YEAR No. 4181

EDITORIAL NOTES

SULPHUR REMOVAL

TEN years ago, at a research meeting of The Institution of Gas Engineers, Dr. Harold Hartley suggested a slogan for the Gas Industry. It was: "Sulphur Must Go!" How many times we have referred to this subject in these columns since then we do not know, but they run into a goodly number. Ten years ago we emphasized the somewhat obvious fact that sulphur dioxide stinks, and that stinks are bad for the Gas Industry. Ten years ago we pointed out that valuable heating loads were being lost because gas undertakings would not interest themselves in sulphur removal, and we spoke about the prestige value of a gas containing practically no sulphur; referring to the enormous wastage caused by corrosion, we said that we ought to do something, and quickly, to remedy it. We discussed the matter optimistically, but our optimism seems to have been ill-founded. The years passed. In 1937, again at a research meeting of the Institution, we had a most important communication on the removal of sulphur compounds from town gas. Our overriding comment on this was to the effect that the cost of removing sulphur was infinitesimal compared with the economic and prestige advantages which would demonstrably accompany its riddance. The years passed. In 1942 we had an Institution report on sulphur removal, a report which recommended as a first step reduction to 10 grains per 100 cu.ft. (we should prefer a per therm evaluation); as a second, that gas undertakings should be encouraged to make better use of the facilities available to enable them to attain a lower limit of 3 grains per 100 cu.ft. We were told of arrangements which had been made whereby it was possible for any undertaking to install and operate a catalytic plant for the purpose. It has for long seemed to us that the case for the removal of sulphur from town gas is a cast iron one; the hesitancy regarding it shown by so many gas undertakings has appeared to us both bewildering and astonishing. When we say there has been considerable pi-jaw on the subject in the Gas Industry's approved manner, we do not forget those undertakings which have for quite a long time now been distributing, to their own advantage and to that of their consumers, gas of 10-grain sulphur or less. But has there been any general fervour? And would any industry other than the Gas Industry have been so complacent? We are at war, but this problem is of pre-war vintage.

What is the attitude of mind to the matter? A fortnight ago we were in Birmingham listening to a gas engineer who sought to impress upon his audience that sulphur removal costs money. The industrial consumers in his area of supply, he said, were quite happy with the gas as he distributed it. Why, therefore, should he take out the sulphur? We turn to the 1942 report of the Institution, in which it is stated simply enough that, inclusive of capital charges, the cost of effecting a reduction to 10 grains is from *nil* up to 0.15d. a therm according to the process used; that the cost of removal to 3 grains works out at from 0.15d. to 0.22d. a therm, again inclusive of capital charges. When we consider for a moment the cost of maintenance of apparatus—domestic and large scale—directly due to a sulphur-laden gas, the fact that for certain industrial processes a low-sulphur gas is essential, the limitations set on its use for space heating and the prejudicial influence of sulphur-laden gas on the prestige of the Industry, the cost of treatment for the removal of sulphur down to 3 grains per 100 cu.ft. is a matter of no consequence.

It seems to us an important and a by no means difficult step to reduce the sulphur content from, say, 25–30 grains to about 10 grains per cu.ft. As we went to press last week we received a letter from Mr. C. R. Ingham (*ante*, p. 794), who suggested that our editorial comment on the subject in our issue of June 23 was an unwarranted castigation of the Industry. Mr. Ingham thinks that removal of sulphur to 10 grains is only a minor improvement. We regard it as a major improvement. However, he wants to get down to 1 grain or less, and he queries whether more than one plant is actually working to such a low figure. As a matter of fact we know there are several plants in operation reducing sulphur down to 3 grains and less, and that such plants can no longer be regarded as in the early development stage. And we come back to the attitude of mind to the matter. If gas undertakings had been really keen to remove sulphur they could in many cases have installed plant for the purpose, even if they had themselves to see such plant through its teething troubles. We still feel that much more action could and should have been taken. In any case, reduction of sulphur to a lower limit than 10 grains per 100 cu.ft. should not be allowed to cause delay in getting down to a figure of 10 grains. On June 25 (see p. 25), by the way, the Manchester District Association inspected an activated carbon benzole extraction plant, and Mr. Norman Hudson, who for nine years has been distributing at Mirfield a gas of only 10-grain sulphur, spoke of the remunerative advantage of the process. *Verb. sap.?* We doubt whether we are looking at the subject from the wrong end of the telescope.

AFFILIATION AND RESEARCH

A YEAR ago ("JOURNAL" of July 22, 1942) we commented on the apparent lack of desire of the Waverley Association to share the notion of unification in the Industry, preferring to stand firm on its small island of isolation. We were referring to the repeated turning down of the suggestion that the Association should seek affiliation with The Institution of Gas Engineers, thereby making the chain of all the Associations complete—a step advocated in 1937, 1938, 1941, and 1942. At last, however, the plunge has been made—wisely, we think—as was announced at the Association's annual meeting on June 25. This will mean further Scottish representation on the Institution's Council, representation previously limited to one (from the North British Association), obviously insufficient. We are glad that the Association has seen fit to join up with the majority in matters concerning the professional and technical advancement of our Industry.

While welcoming this move we do not find ourselves in agreement with Sir Patrick J. Dollan, Chairman in Scotland of the Fuel Efficiency and Economy Committee, who urged the setting up of a Scottish Fuel Board, together with a Research Department, and that an income of not less than £250,000 a year should be spent on it. The Gas Research Board has only just been established to cover the Industry as a whole and to co-operate with other fuel research associations in a considered programme for the common good. We are seeing the spirit of co-ordination in the Standing Consultative Conference which the Department of Scientific and Industrial Research is organizing, to which we referred with satisfaction in these columns only last week. In the circumstances would not a new Scottish venture covering similar problems be redundant and tend to dissipate the value of a central organization of combined research which has as its aim to deal with the fuel problems of Great Britain, including Scotland? Assistance to Scottish Universities and Technical Colleges is, of course, quite another matter, but we cannot see that the present situation calls for the establishment in the community's interest of a national fuel research organization for Scotland.

ACTIVE CO-OPERATION

FOR the Gas Industry to develop to the best advantage after the war—and it cannot so develop unless its primary consideration is satisfactorily to fulfil the requirements of the consumer—there must be co-operation in the domestic sphere with the architect and the builder. How can this co-operation, based on the interest of the public, more particularly the housewife, be made most effective? It seems to us that the Industry should study problems beyond the manufacture and distribution of gas—problems with which the architect has to deal and also problems of a purely social nature. In brief, we think that in this co-operation the Industry should be well informed of what the housewife wants, of the method of approach to post-war housing of the architect, and of its capacity to meet likely demands. Hence we are encouraged by a study which has been made by Ascot Gas Water Heaters, Ltd., with thoroughness and, we consider, breadth of vision, into kitchen planning. This study—a prelude, not a finale, we hope—has been published, and we have read the findings with the greatest of interest; we are sure that it is a co-operative effort of the right type, an effort useful to the Gas Industry as a whole and as a social service. The quiet tone of the report on the investigation appeals to us very much indeed, and if we are not vastly mistaken it will appeal to architects and builders of post-war homes. It is a serious contribution to better living, not through extravagance, but through planning; it is a realistic study, extending from 1935, of the housewife's kitchen tasks, which are many, and into the solution of which gas enters so largely and could obviously occupy a more important role, and it shows lively understanding of the factors involved, not the least being labour and income. We regard the recommendations contained in this Ascot survey as being constructive; we commend the publication as being helpful to the architect and builder, helpful to the housewife, and, as an inevitable interlink, helpful to the Gas Industry, for whose benefit we hope Ascot will be encouraged to continue its good work in this direction—a positive co-operative aid.

Personal

Mr. JOHN F. WEST, M.A., M.Inst.Gas E., was elected a Director of Messrs. West's Gas Improvement Company, Ltd., at the annual meeting on June 23. Mr. John West is the elder son of Sir Frederick J. West, Chairman of the Company, and a grandson of the late Mr. John West.

* * *

Owing to the death of Mr. J. L. Butler, previously announced in our columns, Mr. R. M. GOODMAN, formerly Sales Director, has been appointed Managing Director of Messrs. W. J. Jenkins & Co., Ltd. Mr. B. POLLARD, who has been with the firm for the past 18 years, has been appointed to the Board, as has also Mr. R. W. CROWTHER, who has been with the firm for the last 15 years.

For his work on the fuel requirements of carbonizing plant, the Hydrocarbon Enrichment Value as a basis of interpreting gas-making results, and the debenzolization and desulphurization of coal gas by active charcoal, Mr. STUART PEXTON, Ph.D., of the Gas Light and Coke Company, has been awarded the Degree of Doctor of Science by the University of Leeds. The conferment ceremony took place yesterday.

* * *

On June 30 chief officials of the Sheffield and District Gas Company assembled to make a presentation to Mr. WILLIAM MCCULLOCH, Chief Clerk, on his retirement on superannuation after nearly 24 years' service with the Company. Mr. Ralph Halkett, Director and General Manager, presided over the gathering, and spoke in terms of warm appreciation of the loyal and efficient service which Mr. McCulloch had rendered during the years he had been associated with the Company. Mr. McCulloch was presented with a silver salver suitably inscribed, together with a cut-glass set and a silver sauce boat for Mrs. McCulloch.

At a previous gathering in the Company's offices Mr. McCulloch was presented with a silver cigarette box as a parting gift from the staff.

Letter to the Editor

The Problem of Calorific Value

DEAR SIR,—Several gas engineers have stated to me that they would be glad if the Institution would investigate and report on Mr. George Helps' claims of excellent results obtained with 200 B.Th.U. gas at Nuneaton.

It seems to me that the Industry, through The Institution of Gas Engineers, should be able to state clearly, if Mr. Helps' proposition and practice are impracticable for general adoption, the reasons for such a conclusion. It is insufficient and unconvincing to dismiss Mr. Helps' case without giving reasons.

Yours faithfully,

July 2, 1943. "SOMEWHAT PERPLEXED."

Diary

July 19.—London and Counties' Coke Association Committees: Finance, 11 a.m.; Executive, 11.30; Central, 2 p.m.

July 20.—British Standards Institution, Annual General Meeting, 3 p.m., Connaught Rooms, Kingsway, W.C. 2.

1943 "Journal" Directory

Page 10. BRIDGNORTH. E. H. Hart (South Molton), *M., vice* R. S. Bradshaw.

„ 66. STOKE-ON-TRENT. J. E. Stanier, G.M., *C.E. and G.M., vice* A. Mackay, resigned (as from 30/9/43).

William Sugg & Co., Ltd., are closing down for holidays during the whole of August Bank Holiday week.

J. H. Robinson & Co. (Liverpool), Ltd., are closing down for their annual holiday from July 30 until Aug. 10, but there will be an emergency staff present to deal with matters of urgency.

Galashiels Gas Company, Ltd., 36, Bank Street, Galashiels, has been registered as a public company with capital of £50,000. This is an old company now registered under Part 9 of the Companies Act. Directors are: George Carruthers, Donald G. Stalker, Adam P. Dorward, James M. Brown, Andrew M'Lean, and Alexander Fairgrieve—all of Galashiels.

A Meeting of the Institute of Fuel will be held in the James Watt Memorial Institute, Great Charles Street, Birmingham, at 2.30 p.m. on July 21, when a Paper, "Radiant Heat for Industrial Processes, 'Infra-red' by Gas," will be presented by L. W. Andrew and E. A. C. Chamberlain, of the Gas Light and Coke Company. The meeting will be followed by a discussion.

Correction.—On p. 805 of last week's "JOURNAL," under the heading "Recovery of Benzole" in Dr. J. G. King's Address, a reference is given to Fuel Research Technical Paper No. 44. The correct reference is Paper No. 47.

The fact that goods made of raw materials in short supply owing to war conditions are advertised in the "Journal" should not be taken as an indication that they are necessarily available for export.

WAVERLEY ASSOCIATION OF GAS MANAGERS

THE Annual Meeting of the Waverley Association of Gas Managers was held in Edinburgh on June 25, when Mr. W. M. Henderson, Dalkeith, the President, welcomed a large attendance.

The minutes of the last meeting were read by Mr. R. J. Philp, Secretary, and apologies were intimated from various members and from office-bearers in kindred societies.

It was intimated that since the last meeting the following had died: Messrs. A. Cuthbert, Stirling; J. Robertson, Alva; R. Taylor, Haddington (a former President); A. Thomson, Inverness; these being Ordinary Members. The deaths had also occurred of the following Extraordinary Members: Messrs. Thomas McEwan (R. & A. Main, Ltd.); W. H. Handley (R. Dempster and Sons, Ltd.); D. K. Milne (White Milne & Co.); D. G. Blackie (David Grant and Co.); B. C. Workman, Saltcoats; and J. L. Butler (W. J. Jenkins & Co., Ltd.).

It was unanimously agreed to approve the Committee's recommendation that the Waverley Association apply for affiliation to The Institution of Gas Engineers.

The following were admitted to membership: Messrs. Thomas Haxton, Gorebridge; W. S. Mackay, Oban; S. P. Ormerod, Berwick-on-Tweed; and Thomas Stewart, Fauldhouse (Ordinary Members); and Messrs. Sidney Langford, of R. Dempster & Sons, Ltd., and D. W. White, of White Milne & Co. (Extraordinary Members).

Mr. W. M. Henderson, the President, moved the election of Mr. James Jamieson, Edinburgh, as his successor, Mr. Jamieson's appointment being unanimously and cordially received.

Mr. Jamieson thanked the members for the honour conferred on him. It was a great compliment, he said, to be asked to become their President once again. He had been in the chair in 1927. He was glad they had decided to affiliate with the Chartered Institution, and he would go back as President of the Institution and of the Waverley Association to sponsor their application.

Mr. R. J. Philp, North Berwick, was re-elected Secretary and Treasurer, and Messrs. R. Henderson, Penicuik, and D. Campbell, Caledonian Gas Corporation, were elected as members of Committee for two years. Mr. J. O'Halloran was re-elected Auditor.

Mr. Henderson then delivered his Presidential Address, which we shall deal with subsequently.

Discussion on Presidential Address

Mr. **J. Jamieson** suggested that they must ask themselves first whether their products were the result of processes which were chemically and economically sound enough to justify the application of trained and energetic minds to their further development, and if so what kind of men would be the best fitted to develop these processes to the greatest advantage. The answer to the first question was that carbonization was the most efficient process so far devised for extracting the potential heat of coal. It was generally accepted as being at least twice as efficient as burning coal in the raw state. If, therefore, they ultimately got a national fuel policy directed towards the most efficient use of coal, then the prospects of the carbonizing industries were distinctly bright.

There was to-day a school of thought in the Industry which already advocated complete gasification without solid residue in the form of coke, and which maintained that by selling coke as a fuel they were forcing upon the consumer something he did not really want; that the demand to-day was for fuel on tap which would abolish stoking and the removal of ash, and the dirt to which these gave rise. Against this view it was contended that so far as the domestic consumer was concerned, a solid fuel fire was just what he did want, in spite of the ash and the stoking, and he had no intention of giving up the open fire in favour of gas or anything else. If the latter view was correct then there was a great potential market for coke, which might permit of the price of gas being reduced by the production of more instead of less coke at the gas-works.

It was not his intention to take sides on matters which left room for legitimate differences of opinion. He instanced the complete gasification controversy as an indication of the possibility of change in the process of their Industry. If coke was to find a secure place in the domestic sphere, much of the coke produced would have to be brought up to the standard required by this rather fastidious market. The improvement, or for that matter the complete elimination, of coke might bring about great changes in gas-works practice. It might involve changes in the temperature of carbonization, or in the treatment of the coal before, or the coke after, carbonization.

The important lesson to learn was that their Industry must be adaptable to changing circumstances. The personnel of the Industry must therefore be adaptable, ready to adopt new ideas which were good, capable of assessing and rejecting those which were bad. Adaptability of this order could come only from sound technical knowledge, and he suggested that there would be room in the higher ranks of the gas business only for those who had a good practical training backed by a thorough theoretical knowledge of the principles of the chemistry of coal treatment.

The Industry was crying out to-day for good technicians, and this was particularly evident on the side of utilization. It was futile to have a highly efficient process for extracting the potential heat from coal if the public either did not know about it or did not readily accept the means of utilizing the products of that process.

It was in the solution of these problems that the future should bring a closer collaboration through management between the technician and the salesman. The type of management that was required was one which would be constantly trying through the medium of its sales organization to sense the trend of public opinion, to find out how the Industry's prestige stood with its customers, and trying through the medium of the technicians to provide the apparatus of utilization which would satisfy the public demand.

The outlook of management in the Gas Industry of the future must, too, embrace more than the control of a particular undertaking. It must appreciate not only the trend in technical research and in public demand, but in the developments of modern business and commerce. These developments of late years had been towards an ever closer co-operation between individual units and towards the unification of industry and commerce on a national scale. There was evidence that the Gas Industry still had room for men who had the vision and ability to sacrifice an immediate gain to their own undertakings and work for the good of the Industry as a whole. This was a complicated industry, becoming ever more so, and its clamant need was for more and more specialists, specialists in technical research on production, in utilization, specialists in market research and selling, and above all specialists in management, men of education, experience, and broad outlook.

Mr. **R. Cowie** (Hawick, Past-President) said that he was a coke enthusiast. In Hawick they could not satisfy the demand for coke. Coke was an intermediate fuel between coal and gas. Its use was a step in the direction of teaching the public not to burn raw coal. They should not be afraid of having plenty of coke in stock. Their view should be to enlarge its market. Regarding the B.C.G.A. policy of consumers doing something to maintain their own appliances, he held the view that it was a mistake to let the people fiddle about with these things. In Hawick they had trained women for maintenance jobs and they were doing very well. Later these women might be able to combine sales with maintenance, for a housewife was readier to listen to sales talk from one of her own sex.

Mr. **G. P. Mitchell** (Worcester) said he hoped that whatever the future might contain for them, they would never forget what the small undertakings had done for the Industry in the past. The previous day he had been at an Association meeting in the Midlands where Dr. King had dealt in some detail with future policy. With Dr. King and many others helping him on the research side, the Gas Industry would still hold its place and would gain ground.

Mr. **R. Cowie,** as Immediate Past-President, presented Mr. Henderson with the President's Medal.

The **President** acknowledged Mr. Cowie's remarks, and Mr. **R. Keillor** (Greenock) proposed an omnibus vote of thanks. The President's year would be memorable, he said, for the fact that the Association had affiliated to the Chartered Institution during his term of office, and also because he had persuaded Mr. Jamieson to accept the presidency for the second time.

Luncheon Speeches

Sir **Patrick J. Dollan,** LL.D., D.L., J.P., proposing the toast of "The Gas Industry," said the Waverley Association, as the oldest in Great Britain, had set an example in getting managers and technicians together to get the benefit of discovery and research. He hoped to put before them a bigger scheme of co-ordination than was envisaged by the original members of their Association. He was Chairman in Scotland of the Fuel Efficiency and Economy Committee, and hoped that Committee would be helpful to the country both now and after the war. He would like to see a Scottish Fuel Board set up to co-ordinate the production and other services in respect of coal, gas, electricity, and oil. He was surprised at the way in which Scotland had received the Highland Hydro-Power Scheme, which would cost £30,000,000, and might take twelve years to complete. Such a scheme might have been postponed till a survey was made of all the coal, oil, and other fuel possibilities in Scotland, and the hydro-electric scheme might then have been fitted into the general plan. They should be warned by what was happening, and see that there was a full and thorough examination of all the possibilities. The Gas Industry had over a million consumers in Scotland, and therefore they had a great responsibility.

Sir Patrick said there had been a tendency for Scottish industry to depend too much on London. He would like to see Scottish coal, oil, gas, and electricity co-ordinated under Government supervision, but with as little interference as possible. In Scotland they had produced men like Murdoch, Young, and Beilby, and they should not be at the tail-end of things, with a tradition such as they had. The Scottish Board, he suggested, should not only co-ordinate production but should supervise distribution. He would like to see competition avoided between gas and electricity. There was a place in the country for the services of both. The Board should have some regard to the quality of coal, and gas should have priority for the coals best suited to its needs. There should be co-ordination in by-products, in research, in production, in distribution, with as much freedom as possible left to the individual concern. The Board should look into

the possibilities of bulk purchase, the fixing of standard prices for gas and electricity. There should be a Research Department, equal to anything they had in London or Leeds or any other centre. He would like to see a Research Centre set up to deal with by-products. They should spend not less than £250,000 a year on it. Gas, electricity, coal, and oil could all contribute. The Board, he added, should have power to recommend amalgamation of competing undertakings in certain areas. Consideration also should be given to standard prices. If the Gas Industry was to hold its own it should be possible for gas to be bought in small places as easily as in places like Edinburgh and Glasgow. More favourably placed undertakings could contribute to a pool to form a subsidy to get a standard price. If the Government brought out a scheme for standard freights, it would be no advantage to a man in a small town if he paid more for gas and electricity than his competitors elsewhere.

Concluding, Sir Patrick said he would like to see a truer appreciation of the value and worth of gas managers and technical men. Gas managers had to deal with ailing local authorities and the minimum salary should be £500.

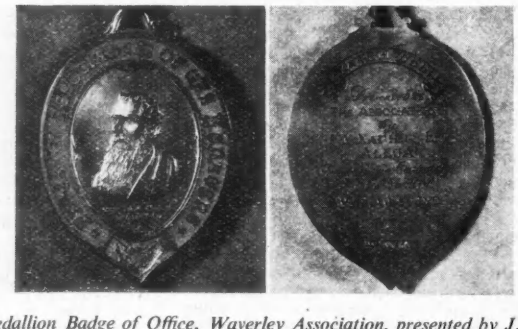
Mr. **J. Jamieson,** replying, said that of all the gifts that Nature had bestowed upon Great Britain with exceptional favour, there was none that conferred more distinctive benefits upon the nation than the gift of coal, and yet there was none that ignorance had more wantonly squandered. Speaking in Edinburgh recently, Mr. Evans, Past-President of The Institution of Gas Engineers, said: "Some of us have been asking for a complete and impartial enquiry into the relative merits of producing heat and power from coal so that the national interests might best be served as well as the interests of the consumer. That was a matter calling for a perfectly impartial body of men, who would view it in a dispassionate manner having in mind only the welfare of the nation." That was a challenge which he (Mr. Jamieson) repeated in London recently in the presence of the Minister of Fuel and Power, and it was a proposal which he hoped would be borne in mind and in due course strongly supported by Sir Patrick. The potentialities of coal processing on the scientific side were indeed such as to raise their highest hopes, and to foster unbounded enthusiasm for the Gas Industry. The carbonizing industries have already massive achievements to their credit. Beyond these, they visualized for the future smokeless cities, clean and labour-saving homes, and the production from coal of gaseous, liquid, and chemical products which would create a revolution in their industrial and commercial economy.

William Young Medallion

Mr. **J. W. Napier, M.B.E.,** presenting the William Young Medallion to the Association, said he had for some time felt that while the North British Association of Gas Managers had identified the name of William Young with the science and practice of the Gas Industry by instituting the William Young Memorial Lectureship, the Waverley Association, a Border Association, might well decide to create a link of memory with Young, himself a true Borderer.

The acceptance by the Association of his offer two years ago of a President's Badge of Office fulfilled the duty, and that day he had the great privilege and pleasure of presenting to the Association a Badge of Office, a memorial in the form of a Medallion of the head of William Young, with inscription and a motto. The medallion had been completed in silver gilt to meet the difficulties of wartime, but he would undertake to have it replaced with gold when normal times arrived.

The Medallion would be worn by the President on occasions of meetings of the Association, the President of each year to be awarded a small replica in gold bearing his own name with his year of office recorded.



Medallion Badge of Office, Waverley Association, presented by J. W. Napier. The inscription reads: "Watch Weel" [Heraldic motto of Sir Walter Scott]. Presented to the Association by J. W. Napier, Alloa, to mark the Centenary of the Birth of William Young, 1940.

The **President,** accepting the medallion, said he would strongly recommend his colleagues to read the appreciation of William Young by the late Dr. Daniel in the 1911 transactions of the North British Association. It was appropriate that this medallion, which was to be the President's badge of office, should be presented by such an outstanding figure as Mr. Napier, one of the active members of the William Young Memorial Committee. In his early days Mr. Napier had been closely associated with research work at the same place as Young had started his career. It was a gracious gesture on the part of Mr. Napier to perpetuate the memory of Young in this manner. The Waverley district was the cradle of William Young.

Mr. **R. Cowie,** proposing the toast of "Kindred Associations," said there were no fewer than twenty-one of these, ten being District Associations, ten Junior Associations, and the remaining one the Chartered Institution. If Gas Associations did no more than bring gas managers together from all parts of the country their existence would be justified. The standard of Papers read at Associations all over the country was high, and their value could not be over-rated. The salary question was one in which they were all interested. No young man was likely to be attracted to the Industry unless his remuneration was to be commensurate with his abilities.

Mr. **R. M. Simpson** (Denny, President of the North British Association) replying, congratulated Mr. Jamieson on his election as President of the Chartered Institution. It was a recognition of his untiring efforts in the service of the Industry. His various compilations on carbonization were reliable works of reference. He hoped that the decision of the Waverley Association to affiliate with the Chartered Institution did not foreshadow any changes affecting the social and friendly atmosphere, the simplicity and informality, of its meetings. The Associations were united to one parent body with one object in view—viz., to pool their technical knowledge for the benefit of all. They had been chosen as media for the initial direction of the recently formed Advisory Boards, and he would appeal to them all to give the Scottish Board their full support.

Mr. **Duncan Melvin** (Edinburgh) proposed the health of the Chairman, and this terminated the proceedings.

MOBILE GAS PRODUCERS

Discussion on Paper by Mr. J. R. Denoon to the Scottish Junior Gas Association—see "JOURNAL," *June 16, p. 749.*

Mr. **W. M. Gledhill** (Stirling) said that filtration had been a major difficulty with producer plants, and this had a direct bearing on engine life. On certain public service vehicles the cylinder wear had been high and consequently the vehicles were frequently out of service for engine overhauling. Mr. Gledhill asked the following points: (1) How was the overheating of the sisal tow prevented? (2) How often should filters be cleaned, and what was the cost of renewal of sisal? (3) What was the average weight of the producer? (4) Was a special coal used for the production of the fuel? (5) On completion of a run could the fuel be re-used?

Mr. **Denoon** stated that the perfect filter had not yet been evolved, but a considerable amount of research was being carried out on filters. On the most recent type of filters cylinder wear had been reduced to an amount comparable with that obtained with a petrol engine. Overheating of the filters could be caused either by the use of poor fuel or by coolers which had not been cleaned and were partly filled with dust. Coolers should be cleaned out every 1,000 miles. The sisal tow was shaken free of dust and repacked in the filter. Cleaning of sisal filters should be carried out on the following basis: Catch filter every 200 miles, and the main filter after an additional 600 miles. A special coal was carbonized to give suitable producer fuel. Fuel remaining in the producer was screened on $\frac{1}{16}$ in. mesh and used again.

Mr. **O. T. Longden** (Stirling) asked about comparative costs between producer gas and petrol, and asked for further details about the water injection system.

Mr. **Denoon** stated that it was rather difficult to give a direct comparison of costs as so many factors had to be considered, but taking into account overhead charges, increased maintenance, and similar charges, it would appear that the producer gas plant could show a saving on petrol costs. With regard to the water injection system, the water was introduced through a zenith carburetter, and was pre-heated with air supply by the hot producer gas flowing through the pre-heater.

Mr. **W. Brown** (Leven) said that it was a pity that petrol had to be used to start the engine. Could a direct start on producer gas be made? Was the speed of 21.96 m.p.h. the maximum speed obtained and was the lorry loaded at the time?

Mr. **Denoon,** in reply, said that a direct start could be made on producer gas if a blower were fitted to create the necessary draught through the fuel bed. Certain proprietary makes of producer incorporated this idea. The blower could either be hand operated or operated by electric motor connected to the battery. Unless water washing or filtration were carried out on a producer plant there was a likelihood of engine wear being excessive. This appeared to be due to chemical action on the cylinders, pistons, &c. The speed of 21.96 m.p.h. was the average speed over the test course with the lorry carrying a 2-ton load. A similar test on petrol with the producer attached to the lorry gave an average speed of approximately 25 m.p.h.

Mr. **T. B. Livingstone** (Perth) enquired whether ordinary vertical

(*Continued on p. 25*)

REGIONAL GAS ENGINEERING ADVISORY BOARDS

Institution of Gas Engineers, June 9.

By C. F. W. RENDLE,

Chairman, Gas Engineering Advisory Board, No. 9 Region

Gas Engineering Advisory Boards represent a logical development of a time-honoured characteristic of gas engineers—a desire to offer help. Their development lies mainly in the collective nature of the assistance and in the prevention of incorrect practice rather than the cure of derangement.

The establishment of such Boards at this juncture is probably due to the successful year's work of the Midland Advisory Panel, which in turn owed its inception to causes arising from war conditions. The dispersal of the war industries into rural areas imposed upon many Gas Undertakings a demand for high and constant loads to an unaccustomed degree. No longer were there any appreciable low-load periods in which to rectify the ill effects of incorrect works practices and in many cases the cumulative effect proceeded unchecked almost to the verge of breakdown.

There is probably nothing new about the fact that such incorrect practices exist and it is merely a fortune of war that they have now been brought to light. Thus the winter of 1941-42 found several Gas Works in the Midlands in a state of serious breakdown. Invariably assistance was sought from and readily given by the Birmingham Gas Undertaking, the management of which, to the benefit of its small neighbours, has ever been generously broad in its outlook and inclinations. Mr. G. C. Pearson and Mr. T. F. E. Rhead, who directed the investigations, found it necessary to use both manual labour and technical service to put each Works in order, and often the technical assistance was continued for a prolonged period to ensure the satisfactory continuance of the modified practices established. Eventually the number of breakdowns caused Mr. A. W. Smith, the General Manager of the Birmingham Gas Department, to ask the Author, as President of the Midland Association of Gas Engineers and Managers, to consider if measures should be adopted to deal with this matter of growing concern.

Formation of Midland Advisory Board

There is no originality in the assumption that prevention is better than cure but it appeared to be an appropriate measure to take. Dr. E. W. Smith, then Director-General of Gas Supply, welcomed and encouraged the suggestion to form a small Panel of Investigating and Advisory Engineers and the Committee of the Midland Association of Gas Engineers and Managers approved the plan. No standing committee existed which was suitably equipped for this work and it was realized that a body holding only temporary office would thus be unsuitable for an enterprise which would take a considerable time to complete. Further, as at this stage it was purely local in character, it appeared properly a scheme for administration by the District Association rather than by The Institution of Gas Engineers.

The Midland Association appointed a small committee to choose a Panel of Advisory Gas Engineers, prepared to act voluntarily in an attempt to avoid breakdowns of gas supply in the district by means of prior investigation and the application of remedial measures where necessary. The area covered by the Midland Association is both large and nebulous and it was decided to embrace in the scheme such of its area as comprised the No. 9 Civil Defence Region which, fortuitously, included the bulk of the Gas Undertakings with large war industrial loads. Dr. Smith helped materially in the choice of personnel and wisely stressed the necessity for a chemist in the constitution of a Panel whose work, to be most solidly effective, must involve chemical as well as other technical investigations.

The Institution was fully informed of the venture stage-by-stage. The Advisory or Consultative Emergency Panel, as it was then called, had twelve members, and an Executive Committee of six, with an Honorary Secretary, was selected from the Panel. The bulk of the work undertaken was within the capabilities of the Committee and the wastage of time and effort involved by the attendance of all the members of Panel was thus avoided.

It is controversial whether this is the best permanent constitution for normal peace-time procedure, when travelling facilities are better and when there may be somewhat less urgency in the demand for prompt attention.

The choice of personnel of the Midland Panel and its Committee was particularly happy in that it comprised a chemist, a distribution engineer, the Regional Gas Engineering Adviser, gas engineers trained on small as well as large Works, and an efficient Secretary—men well able to deal exhaustively with one or other of the many types of problem arising in the committee's work. It may be accepted that a gas engineer possesses to a greater or lesser degree a number of qualifications in wide variety and it is usual to find that each man has a flair for the specialized treatment of one subject. This point is not devoid of importance in achieving success in this type of work, and it is probably more profitable to use a collection of individuals than a body of members each possessing sound but common qualifications, for much profit results from debate in committee.

Preliminary Investigations

The first task being to investigate the possibility of further breakdowns and to take steps to avoid them, a questionnaire was drafted and circulated to each Gas Undertaking in the region. The questions were designed to elicit information calculated to reveal the ability of each Undertaking successfully to meet its anticipated demand for gas during the next winter. It was urged upon each recipient of the questionnaire that the counter-signature of a member of the Panel was desired, the reason being that the personal visit of the Panel member would be welcomed and that it would lead to the securing of additional relevant information not revealed by the questionnaire. In fact this objective was achieved and the personal contacts thus made have proved an invaluable aid to success and are of undoubted mutual benefit.

Assistance and Advice

After a careful scrutiny of the questionnaires by the Committee, a digest of their salient features was compiled and the critical cases dealt with individually.

Remedial measures to be adopted were agreed after much discussion in committee and the engineer concerned was advised appropriately either by letter, or verbally, at his Works or at an interview with the Committee. The help rendered was either some technical advice, or support to the engineer in his approach to contractors or to a Government Department, or assistance of any nature calculated to help an engineer or manager harassed by war conditions beyond any previous experience, and whose limitations of staff and resources were a great handicap. The time factor was of great importance in the construction and repair of plant and the acceleration which often resulted from the Committee's efforts was of value.

Throughout this development of the work, constant co-operation was maintained with Dr. Smith at the Directorate of Gas Supply, either directly or through the Regional Liaison Officer. Altogether in this first phase about 18 per cent of the Undertakings concerned came within the scope of critical examination from the viewpoint of maintaining continuity of supply, and it is true to say that the material assistance given avoided the further occurrence of those contingencies which formed the primary subject of the investigation.

Tribute should be paid to the magnanimous manner in which assistance was accepted. Certainly tact and diplomacy were used by members of the Panel, to the best of their ability, in the investigations, but the absence of false professional pride was manifested in the sincerity of the welcome which they invariably received.

Further Development

In the course of this investigation, and especially as a result of the invaluable personal visits, it became obvious that a

most useful development of the work could be made by an attempt first to assess and then to improve carbonizing and overall efficiencies.

A memorandum was accordingly prepared by each Committee member upon suggested methods which might be used for comparative purposes. The Regional Liaison Officer, who attended each meeting of the Committee and whose co-operation materially contributed to the smooth running of much of its work, had prepared a wealth of statistical data in tabulated form to help in this consideration of gas works efficiency.

It soon became obvious that efficiency in gas works processes is hand-in-hand with technical control of processes. It was known, too, that on the whole the Gas Undertakings in the region were deficient in technical personnel. For example, some 40 per cent of the Undertakings—and this percentage is not represented solely by the smaller Works—employed no technical personnel whatsoever. Further, this percentage was increased to between 50 and 60 if those Undertakings were included which employ only a general purpose assistant as their sole staff for chemical testing and control. This led to the consideration of a co-operative scheme designed to make good this deficiency, it being argued that the provision of chemical and physical testing facilities would materially help to increase the efficiency of processing in the Works of participant Undertakings.

Chemical Facilities Scheme

Mr. T. F. E. Rhead, a member of the Panel, devised a scheme employing mobile caravan laboratories and apparatus cars, a pool of chemists, a central laboratory and district base laboratories. The framework of the scheme, somewhat on the lines of the Industrial Gas Centres, is that its privileges may be enjoyed upon payment of an annual retaining fee or subscription by an Undertaking in proportion to its size. Thereupon the services of one or two chemists, with the facilities of the mobile laboratory or the apparatus car, whichever is appropriate to the case, may be had for a daily fee of an economic order.

There is neither intention nor desire to make financial profits from this scheme. On the other hand, there would be no stinting of expenditure at the cost of efficiency. It would be reprehensible to offer a cheap means of achieving the success of a scheme which fell short of the desired aim. There would be strict confidential treatment of test results as between the chemist and the engineer; and in the investigation of a particular problem, as apart from routine testing, there would be continuity of treatment to a satisfactory conclusion. For this purpose the resources of the central and base laboratories would be used when the work demanded greater facilities than those provided by the mobile units.

It is intended to use chemists, naturally capable of conducting the necessary tests and analyses, and who by their previous experience are able quickly to diagnose the best field for their approach to a problem; and whose qualification and personality would enable them to discuss with the engineer those modifications of practice which the test results indicated as being advisable. It is considered that the scheme may be of distinct service to those Undertakings in possession of laboratories and chemists, by catering for their requirements occasioned by holiday periods or by the sickness of their technical staff. Fuller details of this Chemical Facilities Scheme may be given on another occasion by Mr. Rhead.

Regional Advisory Boards

Subsequent developments from discussions at meetings of the Post-War Planning Committee of the British Gas Federation led to the formation by The Institution of Gas Engineers of Regional Gas Engineering Advisory Boards throughout the country and of the natural absorption of the Midland Advisory Panel into the larger scheme.

It is too early to give much detailed information of the experience of the Advisory Boards generally, but it is true to say that there is ample evidence of enthusiasm and zeal throughout the country, and, what is most gratifying, a determination to succeed. Moreover, it is generally acknowledged that the Advisory Boards, by virtue of the visiting and consulting work of their members, constitute a more direct link between the National Organization and the individual Gas Undertaking than that provided by any other Association within the Industry.

Some Midland Experiences

It may be of interest here briefly to review the nature of some of the matters which called for attention in the course of the year's work of the Midland Panel. Many of the difficulties causing disorganization and breakdown were found to be due to defective carbonizing practice. Amongst the commoner causes of trouble were:

(1) The absence of a proper time schedule for the charging of horizontal retorts.

(2) The over-pulling on gas off-takes through faulty governing, or even the absence of governing, causing degraded gas and choked pipes.

(3) The attempt to make, without the use of a combustible diluent, a gas of a lower calorific value than the optimum obtainable from the type of plant employed and the coal used. In many of these cases the extraction of benzole would have helped materially to avoid the trouble. In these instances there was a dearth of proper technical control owing to inadequacy of technical staff and an insufficiency of recording instruments, gauges, etc., for the determination of temperatures and pressures. There was some evidence of a lack of prudent foresight in forecasting and arranging for proper repairs and maintenance, and to some extent installations were not large enough to permit of adequate repairs being undertaken.

(4) Extensive retort leakage on some vertical installations, with dire consequences to calorific value. This was accentuated by necessary observance of "black-out" regulations and the avoidance of "glare" from stacks. An undesirable corollary was an unduly high consumption of oil for mixed carburetted water gas.

(5) Irregular coal travel because of defective extractor gear.

(6) Irregular producer charging and cleaning, and slipshod scurfing and flue-cleaning programmes.

(7) Absence of proper feed-water treatment, waste-heat boilers being abandoned in consequence, and solid fuel thus unnecessarily used for steam-raising.

(8) Accelerated internal corrosion of wet purification plant due to abnormally high oxygen content of gas at that stage, and causing premature failure of scrubbers and consequent increased loading of dry purifiers.

Now these pitfalls are well known, and indeed are so obvious that it may well be asked "Why were they not avoided normally in the ordinary course of things?" It may have been only an incidental part of the Midland Panel's business to find the answer but the Author suggests as a personal opinion that this state of affairs is indicative of a general peace-time attitude of complacent disregard, of procrastination, and of the absence of the urgent pursuit of an ideal. It is perhaps the result of a trend of thought which is the antithesis of that which the war has induced and which the post-war period will demand from all.

Efficiency in Works Processes

Although the Advisory Boards were inaugurated to give direct assistance to the Gas Industry in its war effort, their work is being developed along lines which are both national and industrial. The improvement of efficiency in works processes is thus the present consideration of the Boards.

The establishment of a simple "yardstick" by which to measure gas-making efficiencies is not easy. There are many pitfalls to be avoided, and care needs to be exercised in the use of any formula which reveals a prejudiced case as between different types of plant, for the installation of which the decision may rest with major issues other than that of efficiency of processing. For true comparisons due regard must be paid to the variations in ash and water content of coal; to the volume of water gas used, which probably requires its own "yardstick"; to the standardization of assessment of coke used in manufacture and held in stock, by methods which take cognizance of moisture content; to the water content of tar made and to many other factors which largely influence the validity of the result.

In view, however, of the immediate necessity for economy

in the use of fuel, it is inevitable that the more obvious methods will first be used in attempting to improve any inefficient processes which may be discovered. At the same time, efforts will be continued to find better solutions.

There are many instances which could be quoted to reveal the widespread drive for efficiency which is in progress and to show that it is not only the apparently inefficient cases in which economies may be effected. Two cases may be cited in which, with plant in excellent condition, well-operated on sound lines with proper technical control, economies have been made in fuel usage. In one case the calorific value of producer gas for heating retort benches has been increased by an even more meticulous technical control of retort house practice. Incidental to this the steam consumption by producers has been reduced and less fuel lost in pan ash. In another similar case the coke used in producers for augmentation of waste-heat steam-raising has been reduced by the adoption of constantly-operated boiler "blow-down," and the exercise of greater diligence in chemical control of feed-water treatment. Both of these instances, whilst originating from the general drive arising from the enquiries of the Advisory Board, owe their realization directly to the usefulness of technical Works-staff conferences.

The Future

The need for the integration of the Gas Industry and the national unification of its scattered parochial aims and practices was never more apparent than now, when plans are being laid for the future and when members of the Industry are ready to co-operate and help. It is probable that the expeditious and direct method of approach afforded by the Advisory Boards will be of good service to the National Gas Organizations in making this help effective. As to the eventual work of the Gas Engineering Advisory Boards, it may be argued that any scheme which is educative in its action (if only by the inducement of a process of emulation) will in course of time abolish the need for its existence. Meanwhile there is scope for the profitable exploration of other avenues of endeavour, of which the following are examples:

(1) The general adoption of a Chemical Facilities Scheme in some form, to aid the paramount drive for efficiency.
(2) The consideration of mutual schemes for the co-operative purchase and hire of plant in occasional use, e.g., mobile cranes, compressors, dumpers, winches, etc. Already the nucleus of such a scheme has been evolved in the Midlands with the purchase co-operatively of a number of purging machines.
(3) The availability of squads of specialist manual workers, e.g., purifier men, painters, etc., whose use is normally occasional or seasonal.
(4) The provision of collective advice upon the suitable development or extension of plant, with which might profitably be coupled a scheme for design and drawing office facilities.
(5) The formation of a link between the National and District Organizations and the individual Gas Undertakings, by which common problems may be considered and information exchanged on such matters as research and education.
(6) The arrangement of refresher courses for gas engineers.

It is hoped, if not indeed expected, that accumulated prestige may enable Advisory Boards to influence certain authorities which are somewhat parochial in their outlook and which consequently may not fit snugly into that unification of the Gas Industry which is so necessary a marshalling point for its concerted march of progress. It is possible, too, that in the same manner the Boards may restore a measure of self-respect and prestige to those who feel that they may be developing into mere controllers of labour and operators of proprietary plant. Such an improvement in status might well have an appreciable influence upon the recruitment into the Gas Industry of progressive young men of the right type, and that alone would be an achievement worthy of much effort.

As the work of the Advisory Boards progresses it will be found that a mass of information, documentary and otherwise, is being collected. This should prove of great assistance in the treatment of post-war problems.

In short, the establishment of Gas Engineering Advisory Boards may be regarded as the most important step taken collectively by the Gas Industry for a very long time. The possibilities are immense and the wealth of material benefit to the Industry may well be of a similar order.

DISCUSSION

Mr. G. C. Pearson (Birmingham): Engineers have been working under well-known difficulties during the last few years and, as stated in the Paper, the increases in output following the dispersal of factories and population into rural areas have substantially increased the responsibilities of a large number of gas undertakings in No. 9 Region. Small works have been called upon to increase their output to a degree not legislated for in pre-war years, and in these circumstances it is perhaps not surprising that breakdowns and the feeling of insecurity should occur. As Regional Gas Engineering Adviser I found myself consulted on an increasing number of occasions in regard to these matters, and although it was not strictly within my office, I did the best I could in the circumstances. I think the inauguration of the Gas Engineering Advisory Boards has to a great extent overcome these difficulties, and Mr. Rendle has wisely directed our attention to future activities.

In striving for economy it is most useful to have a target figure, and I think that every engineer should have before him a target figure for gas, coke, tar, and benzole as applicable to each coal in regular use. The target figure should be based on actual practical results on a standard installation and would form a yardstick of efficiency. Some of the larger gas-works have testing stations, and these figures might be made available in the district. This would not be absolute as in the case of the Fuel Expenditure Index, but a guide only to the more valuable products obtained from carbonization, and could be expressed weekly as a plus or minus figure on the target figure.

In discussing the possibilities of mutual schemes for provision of plant I would like to suggest some further items: First the provision of a portable standard test meter capable of testing station meters at a rate commensurate with their normal operational rate. This test meter could be calibrated against a standard test holder such as exists in some of the larger works. In addition, an inspection and maintenance gang for gasholders and the adoption of specialized methods such as "Gunite" repairs for the repair, maintenance, and construction of ferro-concrete. In all the foregoing there is room for future development.

One immediate problem confronting the Advisory Boards is the reduction in use of oil for water gas production. Oil can, of course, be saved by reduction in calorific value, but such a step involves the use of surplus plant so that the extra therms may be made from coke. It has occurred to me that use could be made of the interlinks between undertakings installed primarily in case of air raid damage. When neighbouring undertakings are interlinked, stock manipulation of such a character could be considered as a whole and not separately, and so allow the production of maximum amount of coal gas and a reduction of water gas to an absolute minimum. I may say that practical steps of such a nature have already been undertaken in No. 9 Region, and undertakings are giving mutual assistance through these interconnexions during periods of repair—at least one case of abnormal production of water gas has been avoided.

Finally I would like to say that the Board has strengthened my own position as Regional Gas Engineering Adviser. No friction of any kind has arisen as a result of separate activities, and I consider that means have been effected in No. 9 Region to bring it to an even better position to withstand the effects of future air raiding.

Mr. T. F. E. Rhead (Birmingham): Before discussing matters relevant to the Chemical Facilities Scheme outlined in the Paper I would like to make one remark on the genesis of the Board. Wartime and adverse weather conditions in the winter of 1941/42 overstrained and produced unexpected weaknesses in many parts of the Industry. Probably the effects would have been less widespread if the leaders of the Industry had been more on their toes in the early years of the war, and sounded a clarion call for high efficiency instead of pursuing what was then premature post-war planning. In any case this thought should make our leaders slow to condemn; rather let them make it an opportunity to get the Industry 100% efficient. Such would be a worthy contribution to the war effort, and at the same time (fortunately for us) to our post-war position.

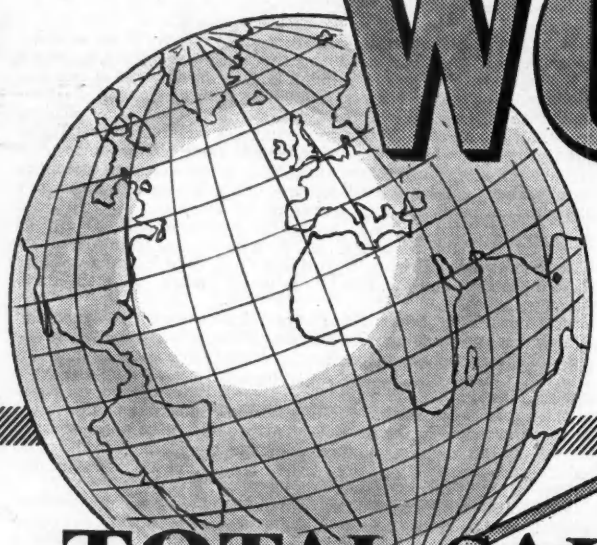
The satisfactory assessment and control of efficiency mean such matters as the measurement of gases and liquids, the weighing of solids, chemical analyses, and physical determinations. To meet the lack of such facilities, the Chemical Facilities Scheme was devised and has met with 60% guaranteed support, apart from Birmingham. Negotiations are on foot to initiate a pilot scheme, but have not yet reached a stage where anything further can usefully be said.

One envisages the scheme, when established, as being capable of far more than ordinary routine testing and works tuning up, though these functions would go a long way towards getting works up to full efficiencies, and quite modest improvements in efficiency would many times pay for the cost of the scheme—*i.e.*, 1% of coal saved in the Midlands represents 25,000 tons per year and would pay capital for the scheme.

We have read a lot about the need for saving coal recently, but the subject is so fundamental that it can scarcely be over-emphasized,

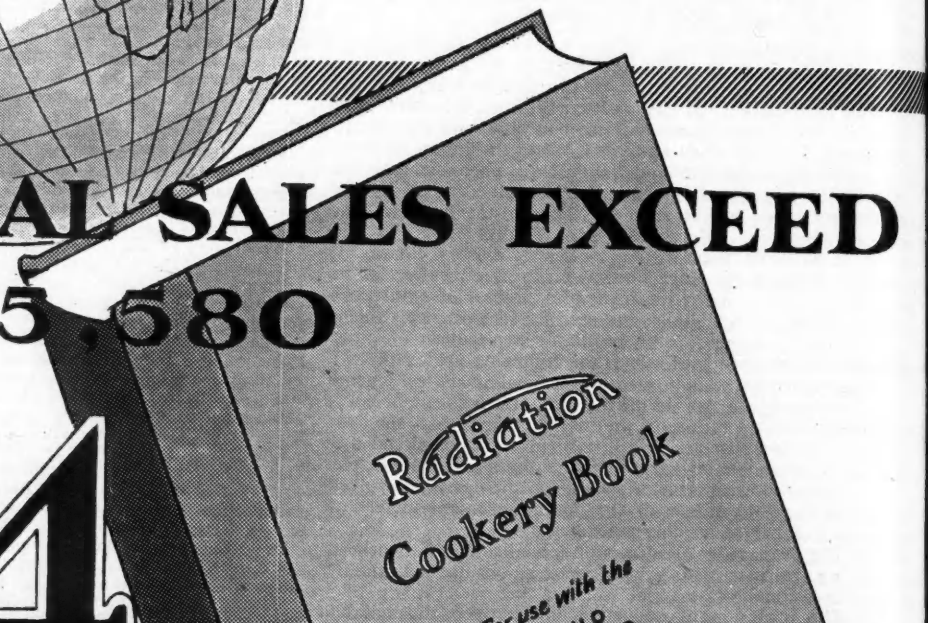
WORLD'S

of all



TOTAL SALES EXCEED

1,615,580



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EDITIONS

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Radiation

certainly not so far as the Gas Industry is concerned. Gas technicians have a great responsibility in this connexion.

In order to emphasize the need for sufficient scientific control, the following observations may be stimulating. Gas undertakings with their partial statutory protection may be said to have two main groups of obligations:

Group I.—So to process their coal (the most suitable they are allowed to obtain) as to supply their consumers with a reliable steady quality and pressure of gas at as cheap a price as possible consistent with—

(1) A controlled suitable quality of coke, tar, liquid, and any other residual made;

(2) an enlightened humane attitude to personnel (manual and non-manual);

(3) the keeping of the process up to date and works in good condition.

Group II.—To use their coal as usefully and with as little thermal loss as practicable.

Coal will become dearer due to—

(1) The more easily won coal getting played out.

(2) Increased pay to miners due to the awakening of the public conscience—long overdue.

(3) The increased exports needed to make up for loss of foreign investments. These exports must be based on coal as our only real indigenous raw material.

(4) Need for unique conservation of a national "wasting asset" to ensure our continuance as a leading nation.

The need for the economical use of coal makes it imperative that we design our works and plant with this end in view. What is the lowest fuel index figure which is theoretically necessary to give sufficient heat and power to enable us to carry out our processes? Obviously we can go many points lower than the present average fuel index for the country of 25.

Mr. **F. C. Briggs** (Dudley): I am not sure whether the Gas Engineering Advisory Boards were meant to be minesweepers or even motor torpedo boats, probably both, but it is certain that the Midland Region Gas Engineering Advisory Board was launched as a lifeboat, and in that capacity it has been eminently successful. I think it might be useful to look for a moment upon the reasons for its success. I think its success has depended largely upon three things. One is the unfailing patience and the sound temper and unwavering faith of its Chairman, Mr. Rendle. We had, as you will see in the Paper, a small Committee consisting of a number of people of strong and clashing personalities. We met once a fortnight, and the business of the day did not cease because it was finished, but because it was time to go home. We never failed to come to a unanimous conclusion, and it is due to our Chairman that success has been achieved in that way. The second point I think that made for success was that the Committee maintained the confidence of the confessional and the consulting room in everything they did. In every case our operations were successful, and in no case did a patient die. All the patients lived and all those works we set out to help were helped, and we carried out operations where at one time it was feared we might fail.

The third point which made for success was that all the engineers had a free choice of an adviser. They were not just sent an adviser. It was a limited choice, it is true, but a free choice. We set out, as I say, as a rescue squad or as a lifeboat, but you cannot rescue anyone unless you know where to look for him and unless the person himself is willing to be saved, and obviously we were faced in the beginning with the job of finding out these facts. In preparing the original questionnaire we admitted that it was a bugbear. The form was a matter for very considerable thought because we knew things were difficult, and we knew that some engineers were quite unable to give us the necessary information. That is a point to be borne in mind in any fuel efficiency questionnaire for our works which are unable to give you the necessary test results to enable you to make a proper analysis. Hence the method was adopted of saying, "Will you please give us the following information, and will you please call in one person from the following panel to countersign your signature?" That worked admirably. Every man could call in an engineer in whom he had confidence, and that panel member was able to elicit information that was of value to the Committee in assessing what difficulties the engineer was up against. The next step was to use the scalping screen and take out those works that seemed to be in danger, and in every case those works that appeared to be in danger were approached through the panel member whose counter-signature was on the paper.

Some of the difficulties were found to be due to lack of technical staff; some to seemingly elementary engineering faults which ought never to have occurred. Some faults were inherited, and some arose from rank bad management. Many engineers have been fighting battles for generations with those in control of their undertakings. Some have won those battles and some have not, and that brings us once more to this question of integration. I think the Advisory Boards should, and can, form a very important part in the process of integration. Integration must mean the bringing up of undertakings that are giving fair service to the level of those that are giving good service, and if the Advisory Board under an efficient and sympathetic Chairman can be brought into consultation in considering that matter, I feel that they, more than anyone else, have the necessary information to help in that way.

Mr. **E. M. Edwards** (Port Talbot): No. 8 Region (South) Advisory Board is functioning upon the lines so ably developed by Mr. Rendle and the Midland Association. The need for such an organization is proved. While I do not propose to give detailed figures, in many instances the fuel efficiency figures and the distribution efficiencies obtained do not add to our pride in the Industry. The work of the Advisory Boards must be handled in a tactful and confidential manner, as it is based upon the mutual assistance of brother gas undertakings. Experience has taught me how essential it is that such confidence should not be broken. In a few instances undertakings might be reluctant to provide the information desired. My personal view is that it is better for the Advisory Boards to be given every assistance. After all, the Advisory Boards tender advice and suggestions upon the essential national need for economy of fuel. Unless Advisory Boards are able to perform their function, some other body will surely be formed by the Ministry of Fuel and Power, because fuel must not be wasted. The work now being carried out reveals a serious lack of qualified technical assistance under which many undertakings have operated. This is a serious matter because, in fact, technical assistance is required urgently in many works and the technical men are not readily available. The Midland Chemical Facilities Scheme is very sound, and one must thank the Midlands for their lead. The giving of advice is in some cases not sufficient. The Advisory Board should be in the position of arranging to give practical help when needed. It is clear that there is room for more methodical control of plant. Much can be done by regular routine inspections of the numerous items that contribute to the efficiency of plant operation. I suggest simple forms of plant inspection report sheets which could be drafted by the Advisory Boards for the use of various size undertakings operating different plants. It appears that the main losses of efficiency arise from (1) unsuitable units of plant, (2) lack of proper maintenance, (3) lack of qualified technical supervision and control, (4) unsuitable and inefficient labour, and (5) unsuitable fuel. The work of the Advisory Board is receiving the support of the gas undertakings in the Wales and Monmouthshire district, and the Advisory Board has already been of considerable assistance to undertakings.

May I conclude upon a personal note? The full service of the Advisory Board can only be realized if each one of us appreciates his own responsibility for the future of our Industry. In this age of planning we may be apt to wait for all our problems to be solved by great plans prepared by others. We must all play our part and prove our will to work for the good of the Industry and of the nation.

Manchester District Association

By the courtesy of the Manchester Corporation Gas Committee the Manchester District Association of Gas Engineers was invited to inspect an activated carbon benzole extraction plant on June 25.

The President (Mr. **W. Fletcher**) extended a hearty welcome, and congratulated the Chairman of the Wigan Corporation Gas Undertaking and his Committee upon having appointed the present Hon. Secretary of the Association, Mr. T. Haworth, as their Chief Engineer.

Mr. **Norman Hudson** (Mirfield) proposed the toast of the Manchester Corporation Gas Department. Mr. Walker, he remarked, had informed him that they were now getting down to a 9-grain sulphur gas in certain parts of the Manchester district by the use of the plant. If Mr. Walker's experience was anything like that which had obtained at Mirfield for the past nine years in sending out a gas with 10-grains sulphur, then he would find that the result he had himself achieved would be not only an added advantage, but also a very remunerative one as far as maintenance was concerned.

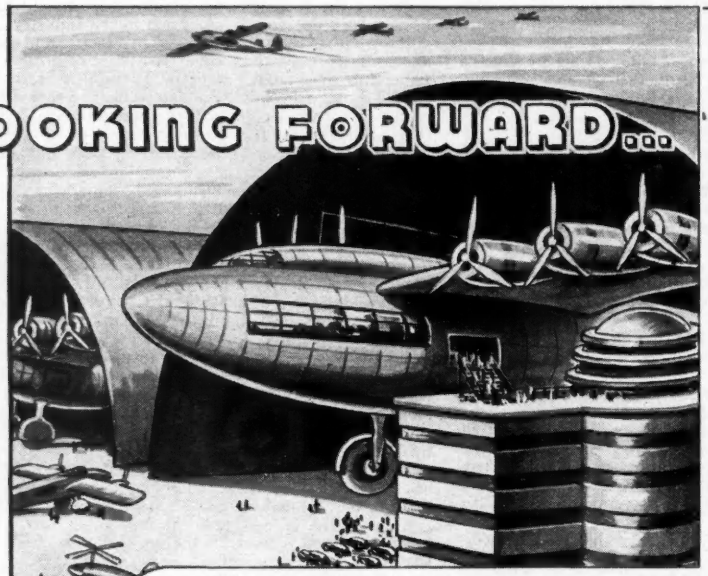
Mr. **H. E. Bloor** (York) seconded the vote.

Councillor **J. Oldfield,** M.P., responding to the toast, said that the future of the Gas Industry would be determined mainly by considerations of cost, but that it had a bright future before it he was fully convinced. He regarded the installation they had inspected as a very important contribution towards the success of that future. Having frequently attended meetings in the Committee Rooms of the House of Commons, and having heard prominent speakers deal with the subjects of coal, gas, electricity, oil, and petroleum, he was well aware of the state of things which might obtain when the post-war period began. The responsibility laid upon the gas engineer was very great.

MOBILE GAS PRODUCERS—continued.

retort breeze had been tried in these producers, and asked for more details about absence of pinking with producer gas.

Mr. **Denoon** replied that it was probable that normal breeze would not be suitable. A suitable fuel should have an ash content not greater than 5% and the potential tar content should not exceed 10 oz. per ton. It should also be highly reactive. These factors would not permit the use of normal breeze. It was noticeable when running on either producer gas or town gas that pinking was entirely absent. It was possible to keep the engine in top gear and run it to a standstill on a hill, without any of the detonation and pre-ignition that occurred with a petrol engine.



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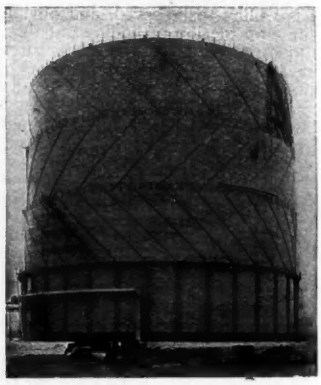

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GAS PRODUCTS PRICES

The London Market July 5.

All Coal Tar Products are in good demand, and Pitch in the London area remains about 45s.

Attention is called to a new Government Order which has just been issued, the Control of Coal Tar Naphtha and Xylole Order, 1943 (S. R. & O. 1943, No. 768).

This new Order differs from the old 1942 Order mainly in the fact that it embraces the supply of these commodities in very small quantities.

Apart from this there is nothing of interest to report.

The Provinces July 5.

The average prices of gas-works products during the week were: Pitch and Crude Tar,* Toluole, naked, North, 90's, 1s. 10d., pure, 2s. 5d. (controlled by the Control of Toluene No. 2 Order, July 3, 1941, which fixes the maximum price at which this material may be sold). Naphtha and Xylole controlled by the Coal Tar Naphtha and Xylole Order, 1943, dated May 31 (S. R. & O., 1943, No. 768), operative from June 1. Carbolic acid, 60's, naphthalene, and anthracene controlled by the Coal Tar Products Prices Order S. R. & O. 2509, dated Dec. 7, 1942, and operative from Jan. 1, 1943. Filtered heavy oil (min. gr. 1,080), 7½d. to 8d. Creosote oil has been generally controlled as to direction and price for some time past. Current value—fuel grades 5d. to 5¼d.; timber preservation and other purposes 4¾d. to 6d.

* In regard to pitch and crude tar prices we would ask readers to refer to the editorial note on p. 396 of the "JOURNAL" for Sept. 10, 1941.

Tar Products in Scotland July 3.

Deliveries are maintained on a large scale. Refined tar controlled. Value is 4½d. per gallon *ex* Works, naked. Creosote oil: Specification oil, 6¾d. to 7d.; low gravity, 7¾d. to 7¼d.; neutral oil, 6d. to 6½d.; hydrogenation oil, 5⅞d. per gallon; all *ex* Works in bulk. Refined cresylic acid is in great demand at 3s. 6d. to 4s. 6d. per gallon, *ex* Works, naked, according to quality. Crude naphtha: 6½d. to 7d. per gallon. Solvent naphtha: Basic prices delivered in bulk, 90/180 grade 2s. 8d., and 90/190 Heavy naphtha, Unrectified, 1s. 10½d.; Rectified, 2s. 3d. per gallon. Pyridine: 90/160 grade, 13s., and 90/140 grade, 15s. per gallon.

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GAS STOCKS AND SHARES

The stock markets were firmer and more active last week. The chief features were gold-mining shares, certain industrials and short-dated British Funds, while towards the close more interest was shown in home rails.

The supplies of gas stocks and shares are still fairly small so that the number of recorded transactions shows little increase. Prices remained very firm, and although apart from *ex div.* markings there were only a few changes last week, most of these were more than usual, *e.g.*, Imperial Continental, for which a good demand continued, closed 5 points up and Plymouth and Stonehouse 7 points higher. In the Supplementary List Eastbourne "B" 3½% gained 5, and at the Newcastle Exchange Blyth ord. closed 7 up. Compared with a month ago, a number of stocks were marked *ex* the usual half-yearly interest in June, and apart from these price changes were all in an upward direction.

The following quotations were altered during the week:

PROVINCIAL EXCHANGES

Blyth Ord.	115—117	+7
Newcastle 3½ p.c. Deb. (*x.d.*) ...	96½—97½	June 28
Sheffield Ord.	134—137	+4

OFFICIAL LIST

Alliance & Dublin 4 p.c. Deb. (*x.d.*)	95—100	June 28
British 5½ p.c. "B" Cum. Pref. (*x.d.*)	110—115	"
Colombo 7 p.c. Pref.	21/6—23/6	+/-/64
Croydon 5 p.c. Deb. (*x.d.*)	122—127	June 28
East Surrey 5 p.c. Deb. (*x.d.*) ...	121—126	"
Imperial Continental	91—94	+5
Plymouth & Stonehouse	97—102	+7
South-Eastern Gas Corporation Ord.	19/6—20/6	+-/64
South Metropolitan Ord.	83—86	+1
Ditto 3 p.c. Deb. (*x.d.*)	82—87	June 28
Southampton Ord.	85—90	+2

SUPPLEMENTARY LIST

Croydon 4 p.c. Deb. (*x.d.*)	101—106	June 28
Eastbourne "B" 3½ p.c.	52—57	+5
Southampton 5 p.c. Red. Deb. (*x.d.*)	103—108	June 28
Tottenham 5 p.c. Reg. Red. Mt. (*x.d.*)	99—102	July 1

Quotations on the London and Provincial Stock Exchanges

OFFICIAL LIST

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations July 1
1,767,439	Sept. 7	5	5	Alliance & Dublin Ord. ...	83—88
374 000	June 28	4	4	Do. 4 p.c. Deb.	95—100
583,407	May 10	5	5	Assed. Gas & Water U'd'ts Ord.	19/6—20/6
388,938	"	—	—	Do. Deferred	19/6—20/6
500.000	"	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	19/3—20/3
535,545	"	4	4	Do. 4 p.c. Red. Cum Pref.	19/6—20/6
341,966	"	4	4	Do. 4 p.c. Irred. Cum. Pref.	17/6—18/6
561,370	Feb " 22	7	7	Barnet Ord. 7 p.c.	155—160
300,000	June 15	1/4⅛	1/9⅜	Bombay, Ltd.	22/6—24/6
690,407	Feb. 15	7	7	Bournemouth 7 p.c. max. ...	138—143
362,025	June 15	4	4	Do. 4 p.c. Deb. ...	105—110
659,955	March 15	2½	2½	Brighton, &c., 5 p.c. Con. ...	84—89
855,000	"	6	6	Brit. Gas Light Ord.	107—112
545,000	June " 28	5½	5½	Do. 5½ p.c. 'B' Cum. Pref.	110—115
120,000	" 15	4	4	Do. 4 p.c. Red. Deb.	92—97
10,000	Nov. 6 '33	6	4	Cape Town, Ltd., 4½ p.c. Cu. Pf.	45/-—65/-
626,860	Feb. 8	6	6	Cardiff Con. Ord.	110—115
24,500	June 15	7	7	Colombo 7 p.c. Pref.	21/6—23/6
764,169	March 22	-/9.56	-/9.56	Colonial Gas Assn. Ltd. Ord. ..	⅛—¼
400,000	"	1/3.298	1/3.298	Do 8 p.c. Pref. ...	⅛—¼
1,748,090	July 22 '40	2	3	Commercial Ord.	65—70
620,000	June 7	3	3	Do. 3 p.c. Deb.	60—65
286,344	Feb. 15	5	5	Do. 5 p.c. Deb.	105—110
807,560	" 22	6	6	Croydon sliding scale	122—127
644,590	"	5	5	Do. max. div.	101—106
620,385	June 28	5	5	Do. 5 p.c. Perp. Deb. ...	122—127
179,500	Feb. 22	5	5	East Surrey 'B,' 5 p.c.	87—92
176,461	June. 28	5	5	Do. 5 p.c. Deb. (Irred.)...	121—126
250,000	Nov. 9	6	4	Gas Consolidation Ord. 'B' ...	16/6—18/6
250,000	May 10	4	4	Do. 4 p.c. Red. Cum. Pref.	18/-—20/-
19,107,811	Feb. 15	—	†1	Gas Light & Coke Ord. ...	17/6—18/6a
2,600,000	"	—	†1½	Do. 3½ p.c. max.	70—75
4,477,106	"	4	4	Do. 4 p.c. Con. Pref. ...	90—95
2,993,000	"	3½	3½	Do. 3½ p.c. Red. Pref. ...	92—97
8,602,497	May 31	3	3	Do. 3 p.c. Con. Deb. ...	84—87
3,642,770	"	5	5	Do. 5 p.c. Red. Deb. ...	107—110
3,500,000	"	4½	4½	Do. 4½ p.c. Red. Deb. ...	106—109
700,000	March 8	3½	3½	Do. 3½ Red. Deb. ...	96—99
5,600,000	May 13 '40	4	8	Imperial Continental Gas. ...	91—94
43,820	Jan. 25	3½	3½	Do. 3½ p.c. Red. Deb. ...	95—100
231,978	Feb. 22	5	5	M.S. Utility 'C' Cons.	95—100
918,657	"	4	4	4 p.c. Cons. Pref.	90—95
675,000	May " 3	‡4	‡4	Montevideo, Ltd.	95—100
300,000	April 27	9	7	Oriental, Ltd.	110—115
368,537	June 15	3½	2½†	Plymouth & Stonehouse 5 p.c.	97—102
621,667	Feb. 8	7½	7½	Portsmouth & Gosport Cons.	120—125
2,381,363	May 17	4†	4†	Primitiva Holdings, Ltd. Ord.	12/-—14/-
233.900	June 15	3½	3½	Do. 6½ p.c. Red. Cum. Pref.	99—104
648.999	May 31	1/1½	1/1½	Severn Val. Gas Cor. Ld. Ord.	20/-—21/-
597,972	March 8	4½	4½	Do. 4½ p.c. Cum. Pref. ...	19/6—20,6
2,528,714	Aug. 24	1/-	7½	South East'n Gas Cn. Ld. Ord.	19/6—20/6
1,000,000	March 1	-/10½	-/10½	Do. 4½ p.c. Red. Cum. Pref.	19/6—20/6
1,068,869		4	4	Do 4 p.c. Irred. Cum. Pref.	19/3—20/3
6,709,895	Feb." 22	—	†1	South Met. Ord.	83—86
1,135,812	"	—	†6	Do. 6 p.c. Irred. Pref. ...	125—130
850,000	"	—	†4	Do. 4 p.c. Irred. Pref. ...	90—95
1,895,445	June 28	3	3	Do. 3 p.c. Perp. Deb. ...	82—87
1,000,000	Jan. 11	5	5	Do. 5 p.c. Red. Deb. ...	103—108
1,543,795	Feb. 8	4	4	South Suburban Ord. 5 p.c ...	95—100
$12,825	"	5	5	Do. 5 p.c. Perp. Pref. ...	107—112
500,000	"	4	4	Do. 4 p.c. Perp. Pref. ...	88—93
250,000	"	3½	3½	Do. 3½ p.c. Red. Pref. ...	90—95
888,587	June 15	3	5	Do. 5 p.c. Perp. Deb. ...	122—127
750,541	Feb. 8	2	6	Southampton Ord.	85—90
350,000	" 15	5½	5½	Swansea 5½ p.c. Red. Pref. ...	95—100
1,076,495	March 1	5	5	Tottenham & District Ord. ...	106—111
338,555	"	5	5	Do. 5 p.c. Pref.	106—111
453,380	Dec." 7	4	4	Do. 4 p.c. Perp. Deb. ...	102—107
1,247,505	May 31	4	6	U. Kingdom Gas Cor. Ord. ...	19/9—20/9
1,085,952	" 17	4½	4½	Do. 4½ p.c. 1st Cum. Pref. ...	19/-—21/-
772,709	"	4	4	Do. 4 p.c. 1st Red. Cum.Pref.	19/-—21/-
745,263	June " 21	4½	4½	Do. 4½ p.c. 2nd Non.Cum. Pf.	17/-—19/-
1,200,000	March 15	3½	3½	Do. 3½ p.c. Red. Deb. ...	95—100
380,608	Aug. 24	6⅜	6⅜	Uxbridge, &c., 5 p.c.	118—123
1,371,138	Jan. 25	4	6	Wandsworth Consolidated ...	107—112
2,525,768	"	4	4	Do. 4 p.c. Pref.	91—96
1,343,964	June " 15	5	5	Do. 5 p.c. Deb.	122—127
383,745	"	4	4	Do. 4 p.c. Deb.	101—106
558,342	Feb." 22	5	5	Watford & St. Albans Ord. ...	109—114
300,000	June 7	3½	3½	Do. 3½ p.c. Red. Deb. ...	90—95

SUPPLEMENTARY LIST

Issue. £	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations July 1
351,685	June 15	5	5	Brighton, &c., 5 p.c. Perp. Deb.	122—127
415,250	"	4	4	Bristol Gas Co., 4 p.c. New Deb.	100—105
140,205	Feb. " 15	7	7	Cambridge, &c., 7 p.c. Cons. 'B'	135—140
295,932	March 8	5	5	Cheltenham, 5 p.c. Cons .Ord....	97—102
42,500	June 15	4	4	Do. 4 p.c. Perp. Deb....	102—107
150,000	Feb 22	4	4	Croydon Gas, 4 p.c. Pref. (Irr.)	90—95
130,000	June 28	4	4	Do. 4 p.c. Deb.	101—106
146,700	Feb. 22	5½	5½	East Surrey, 5½ p.c. Pref. 'A' ...	110—115
53,220	" 9	6	6	Do. 6 p.c. Cum. Pref. ...	120—125
...	Aug. 19 '40	6	4	Eastbourne, 'B' 3½ p.c.... ...	52—57
117,425	Feb. 5 '40	8	8	East Wight Cons. 5 p.c.	65—70
239,135	Nov. 9	5	5	Gas Consolidation 'A' Ord. (£1)	16/6—18/6
156,600	Feb. 15	5	5	Hampton C't, 5 p.c. Cons. Ord.	95—100
18,000	Dec. 29'41	3½	3½	Malta & Med'n., 7 p.c. 1st Pref.	30—40
10,845	June 30'41	3½	3½	Do. 7½ p.c. 2nd Pref.	30—40
50,000	Feb. 22	£5 4 6	£5 4 6	Mid. South. Util., 'A' Cons. 5 p.c.	90—95
70,380	June 21	5	5	Newport (Mon.), 5 p.c. Deb...	110—115
65,000	May 17	5	5	North Middlesex, 5 p.c. Pref. ...	105—110
70,000	March 15	5	5	Plymouth & Stone., 5 p.c. Deb.	112—117
76,501	June 21	4	4	Reading, 4 p.c. Perp. Deb. ...	97—102
74,777	March 31	4	4	Romford, 4 p.c. Debs. (Reg.) ...	95—100
21,000	June 15	5	5	Slough, 5 p.c. Perp. Deb. ...	120—125
211,740	" 28	5	5	Southampton, 5 p.c. Red. Deb.	103—108
363,575	July " 1	5	5	Tottenham, 5 p.c. Reg. Red. Mt.	99—102
202,019	April 12	7½	7½	Tunbridge Wells, 4 p.c. Scale ...	118—123
135,257	June 15	5	5	Uxbridge &c., 5 p.c. Perp. Deb.	121—126

PROVINCIAL EXCHANGES

					Quotations June 25.
804,948	March 1	5	5	Bath Cons.	100—103
122,577	" 8	5	7	Blyth 5 p.c. Ord.	115—117
1,667,250	Feb. 15	5	5	Bristol, 5 p.c. max.	114—116
120,420	June 15	4	4	Do. 1st 4 p.c. Deb.	100½—102½
415,250	"	4	4	Do. 2nd 4 p.c. Deb. ...	103½—102½
328,790	"	5	5	Do. 5 p.c. Deb.	115—119
157,150	Feb " 1	5	6½	Chester 5 p.c. Ord.	98—102
92,500	June 15	4	4	Do. 4 p.c. Pref.	78—80
36,430	"	3½	3½	Do. 3½ p.c. Deb.	77—81
41,890	"	4	4	Do. 4 p.c. Red. Deb. ...	97—99
542,270	Feb. 8	6	9	Derby Cons.	122—127
55,000	June 15	4	4	Do. 4 p.c. Deb.	97—102
10,000	Feb. 22	10	10	Great Grimsby 'A' Ord. ...	160—170
6,500	"	10	10	Do. 'B' Ord.	160—170
79,000	"	10	10	Do. 'C' Ord.	150—160
732,000	Feb. " 15	4	4	Hartlepool G. & W. Cn. & New	83—85
2,167,410	" 22	5	5	Liverpool 5 p.c. Ord.	106—107
245,500	June 21	5	5	Do. 5 p.c. Red. Pref. ...	99—103
306,083	Jan. 18	4	4	Do. 4 p.c. Deb.	100—102
20,000	Dec. 21	5	5	Long Eaton 5 p.c. Pref.	9—11
80,000	"	5	5	Do. 5 p.c. Deb.	100—105
2,430,267	Feb. " 8	5½	5½	Newcastle and Gateshead Con.	23/3—23/9a
682,856	"	4	4	Do. 4 p.c. Pref.	98—100
776,706	June 28	3½	3½	Do. 3½ p.c. Deb.	96½—97½
277,285	April 27	5	5	Do. 5 p.c. Deb. '43 ...	99—101
13,200	Sept. 16	8⅜	7	Pontyp'l Gas & W. 10 p.c. 'A'	11½—12½
13,600	"	6	5	Do. 7 p.c. 'B'	9½—10½
40,000	"	5	6	Do. 7 p.c. 'C'	9½—10½
106,280	Feb. 8	10	10	Preston 'A' 10 p.c.	167—169
188,219	"	7	7	Do. 'B' 7 p.c.	124—129
1,806,339	" 22	6½	6½	Sheffield Cons.	134—138
95,000	Jan. 4	4	4	Do. 4 p.c. Deb.	98—100
332,351	Feb. 22	6	6	Sunderland 6 p.c. max. ...	114—116
192,150	" 8	5	5	Weston-super-Mare Cons. ...	99—101
64,338	Jan. 4	4	4	Do. 4 p.c. Deb.	103—106
33,340	"	7½	7½	Do. 7½ p.c. Deb.	142—147

a—The quotation is per £1 of Stock. * Ex. div. † For year. ‡ Paid free of income-tax.